

## **Presentation of the Asian partners**

**1 Research Activities**

**2 Staff members**



# Research Activities of Asian Partners

## 1.1 AIT, Asian Institute of Technology (Thailand)

The research activity in Robotics at AIT is carried in laboratories of two fields, Mechatronics and Computer Science as part of the School of Engineering and Technology.

**Mechatronics in AIT** : <http://www.ise.ait.ac.th/>

The growing number of electronic devices and the strong interaction between mechanical, electronic and software components no longer permit separate investigation of each of those part .

The curriculum in mechatronics is designed to provide multidisciplinary knowledge and to develop the ability to design mechatronics systems.

**Computer Science in AIT** <http://www.cs.ait.ac.th/>

Computer Science field of study (CS FoS) aims to meet the growing international demand for highly-skilled computer specialists by:

- Providing a curriculum that enables students to acquire the knowledge required to function in the modern-day computer industry;
- Providing a state-of-the-art research environment;
- Encouraging students to specialize beyond the basic curriculum in areas of high demand by doing theses and research studies;
- Fostering close relationships with both local industry and international organizations

### **1. Presentation of Robotics Research Activity in AIT**

Carried research topic:

- Computer vision (pattern recognition and image processing)
- Robotics
- MEMS design, fabrication for electronic and bio medical applications
- Soft computing algorithms for robotics and automation applications
- Mechatronics applications for industrial use
- Control and measurement.
- Design and development of hardware and software of mechatronics devices.
- New robot mechanism
- Novel control algorithm
- Machine vision and learning, especially as applied to mobile robot perception and navigation.
- Statistical learning theory for computer vision
- Autonomous robot sensory and control systems.

There are currently 40 master thesis students and over 20 Ph D students conducting Robotics related research in AIT. The group publishes about 15 International Journal papers and about 20 International conference papers every year. The group has very close interaction with industry evidenced by over 15 Million Baht contract research grants awarded by industry in addition to equipment donation.

#### **The Mechatronics and Automation laboratory**

This is well equipped with many PLC systems (S5, S7-200/300/400, INDRAMAT, BOSCH), distributed control systems (PCS7), operator panels (OP5, OP17/DP and OP35), a PC-based human machine interface package (WINCC) and networked field buses (PROFIBUS, INTER-BUS and SERCOS). The lab has mobile robots (NOMAD, PIONEER 2), robot arms (CRS), an industrial robot (KUKA-KR15), a self-made open architecture CNC machine, CNC control systems (MTC200, SINUMERIK 8100/8400), image processing systems (DVT, MATROX) and FPGA's (XILINX-1i VIRTEX PRO, ALTERA). Software such as SYNOPSIS IC Design, ANYSIM, ANSYS, ADAMS

and many types of special sensors and actuators are also available for research use. The Integrated Circuit Design laboratory gives students access to a wide variety of professional software applications including ANSYS, Orcad, ModelSim SE, Xilinx ISE, Synopsys, Leonardo Spectrum LS and Tanner (SEdit for Schematic Capture, T-Spice and W-Edit for Simulation and L-Edit for Physical Layout). The laboratory's facilities are used for analog and digital circuit design, microchip design and fabrication, MEMS, micro-actuators and micro-sensors design, computational electronics, and so on. Fabrication facilities are available through the National Electronics Technology Center and the National Science and Technology Development Administration located in nearby Science Park. Mechatronics faculty and students work in close collaboration with industry and government sectors in the areas of industrial automation, robotics, control, system design and integration. Some examples of ongoing projects include a medical tele-analyzer, automated visual inspection systems, MEMS design, an autonomous flying robot, automating centrifuge machines, an autonomous underwater robot and automating crystallization processes.

### **The Computer Integrated Manufacturing (CIM) laboratory**

This laboratory provides hardware and software support for Industrial Systems Engineering. Many research activities have been undertaken in close collaboration with industry and government sectors in the area of Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Computer Numerical Control (CNC), Rapid Prototyping (RP) and Medical Technology. The CIM laboratory also provides specialized training and consultancy services in CAD, CAM, CNC machining, reverse engineering, rapid prototyping, packaging technology, flexible manufacturing systems (FMS), and development of a postprocessor for 5-axis CNC. The CIM laboratory is equipped with production and training CNC machines including an EMCO TURN242 industrial production CNC lathe, an EMCO VMC200 CNC vertical machining center for universal production, a MAHO MH600E2 5-axis universal milling and boring machine, an EMCO compact 5 CNC, an EMCO F1 CNC, a LVD CNC press brake, a LVD water-jet cutting CNC, a ZOLLER tool presetting system, a Mondiale Gallic G-420 Industrial CNC lathe and an EMCO CNC training system. The available CAD/CAM software includes UNIGRAPHICS NX4, Master CAM 9.1, Mechanical Desktop 6, AutoCAD Inventor Series, SolidWorks 2005, CAM 2000, Mimics 6.3 and Magic 5.4.

The Metrology laboratory also provides hardware and software support for Industrial Systems Engineering. The Metrology Laboratory is equipped with measuring instruments including Zeiss CMM, Mitutoyo Profile Projector and a Taylor Hobson surface roughness tester, as well as LabVIEW hardware and software.

## **1.2. STKU, Faculty of Science and Technology in Keio University (JAPAN)**

### **1 Presentation of the Research laboratories in STKU**

The research activity in Robotics at STKU is carried on in laboratories of three departments (System Design Engineering, Mechanical Engineering and Information&Computer Science) as part of the Faculty of Science and Technology at Keio University, Japan.

<http://www.st.keio.ac.jp>

[http://www.st.keio.ac.jp/english/facu\\_sd/index.html](http://www.st.keio.ac.jp/english/facu_sd/index.html)

[http://www.st.keio.ac.jp/english/facu\\_mech/index.html](http://www.st.keio.ac.jp/english/facu_mech/index.html)

[http://www.st.keio.ac.jp/english/facu\\_ics/index.html](http://www.st.keio.ac.jp/english/facu_ics/index.html)

#### **- Department of System Design Engineering :**

The aim of the **Department of System Design Engineering** is to seek new engineering systems that harmonize with global, human and social environments. This include space structures, energy devices, infrastructures, buildings, robots and so on. Our design is defined by the optimization processes that utilize integration and control technologies. Harmonization of advanced individual technologies with human, society and our globe is being pursued.

#### **- Department of Mechanical Engineering:**

The research carried out in the **Department of Mechanical Engineering** covers wide range of hardware engineering. In recent years, mechanical engineering has expanded its applications area through combination with information technology, electronics, and optics technologies, as well as conducting full research and development on frontier technology of robots.

#### **- Department of Information and Computer Science:**

The main aim of the research work carried out by the **Department of Information and Computer Science** is to integrate the information with communication resources, taking into account the limitations of computer domains. The research does not simply focuses on combination of information science, information engineering, communication engineering, and computer science. The technologies for efficient "information" exchange are studied. The novel computer technologies aiming to help of the human society are also studied.

### **2. Presentation of the Research Activity at STKU**

**Research Topics on Robotics:** Robotics research is concentrated in laboratories belonging to the following departments: SD:System Design Engineering, Me:Mechanical Engineering, ICS: Information & Computer Science, APPI:Applied Pysics & Pysico-Informatics.

#### **- Robotics/ Haptics/ Motion Control (SD:Ohnishi Laboratory):**

This laboratory focuses on computer based networks, real-time systems, medical mechatronics, haptic devices.

<http://www-oml.sum.sd.keio.ac.jp/en/index.html>

**Equipment:** Humanoid Robot (Pararell/Serial type), Bilateral Robot (Rotational/Linear movement type)

#### **- Robotics/ Welfare Machine /Motion Control (SD:Murakami Laboratory):**

This laboratory focuses on robot control/instrumentation and sensor applicationa to achieve a flexible human assist (FHA) system. Research interest includes: sensor application, intelligent

wheelchair control, vibration control, mobile manipulator control, and intelligent manufacturing systems.

(<http://www.fha.sd.keio.ac.jp/en/index.html>)

**Equipment:** Mobile Manipulator, Electric Vehicle, Electric Wheelchair, Electric Bicycle, Redundant Manipulator.

- **Applied Robotics/Structural Health Monitoring (SD:Mita Laboratory)**

At Mita laboratory, structural fatigue monitoring technologies used to diagnose the „health” of constructions are studied. The monitored structures include tall buildings, bridges, pipelines, airplanes and satellites. Fiber optic sensors, piezoelectric sensors and damage index sensors are currently under development. A prototype structural monitoring system is being installed into a base-isolated building to identify the effectiveness of the system and future research needs. In order to realize a sensor network system consisting of sensors, data warehouses and diagnosing intelligences, system identification methods, pattern recognition methods, control theories and structural mechanics are extensively used.

(<http://www.mita.sd.keio.ac.jp/>)

**Equipment:** Mobile Robot

- **Mechanical Design (SD:Hideki Aoyama Laboratory)**

This laboratory focuses on digital style design systems and digital manufacturing systems, with a system under development to construct high quality aesthetic form based on designer's KANSEI and science. Advanced CAM systems and manufacturing systems using virtual reality technology are also being developed.

(<http://www.ina.sd.keio.ac.jp/Haoyama/2007/e0-index.html>)

- **Robotics/Micro Machine (ME:Miki Laboratory)**

MEMS (MicroElectroMechanical Systems) Technology has enabled manufacturing of micro/nanoscale structures. A wide variety of sensors, actuators, and chemical/bio chips have been developed by exploiting the virtues of their small sizes and scale effects. Our laboratory focuses on innovative micro/nano-fabrication technologies, human-interface devices, micro-fluidic devices utilized for bio/medical applications, and power MEMS devices.

(<http://www.miki.mech.keio.ac.jp/>)

**Equipments:** Fabrication Instrument for MEMS

- **Robotics/ Intelligent Control/ RoboCup (SD:Yoshida & Takahashi Laboratory)**

This laboratory focuses on control method of autonomous mobile robots such as: robots for RoboCup, mobile robots. The problems of vehicle dynamics and control of automobiles and rail-cars, vibration control of mechanical systems, architectural and space structures, intelligent control methodology and other related problems are under investigation.

(<http://www.yoshida.sd.keio.ac.jp/>)

**Equipments:** Mobile Robot

- **Robotics/ Motion Analysis/ Image Analysis (SD:Nakazawa Laboratory)**

This laboratory focuses on vision methods and on motion analysis and synthesis for autonomous mobile robots.

(<http://www.k-mail.sd.keio.ac.jp/>)

**Equipments:** Mobile Robot, Six Legs Robot, Surgery Manipulator

- **Mechanical Design (SD:Tojiro Aoyama Laboratory)**

This laboratory focuses on hardware and software components for advanced manufacturing systems. The manufacturing system components such as diverse machine tools, spindle systems, table systems, sensor systems, robot components and jig and fixture devices are studied considering their performance improvements.

<http://www.ina.sd.keio.ac.jp/2005/index.htm>)

- **Internet applications / Network based control system (SD:Yakoh Laboratory)**

This laboratory focuses on real-time facilities required control systems using the Internet. The proposed technology allows to control the delay time, and to use conventional TCP/IP protocol in a complex network infrastructure. Laboratory builds the „visual-audio-tactile communication system” as an application.

<http://www.comp.sd.keio.ac.jp/index.html.en>)

**Equipments:** Bilateral Robot

- **Electromagnetics & Mechanics / Nonlinear Dynamics (ME:Sugiura Laboratory)**

This laboratory focuses on dynamics of electro-mechanical systems including superconducting bearings and electromagnetic acoustic transducers (EMATs). It is studied also the nonlinear and chaotic dynamics and coupling problems in electromagnetics and dynamics using theoretical and numerical analysis combined with experimental work. Recent research aims the spatio-temporal dynamics of multiple degree-of-freedom coupled systems including human brain. The inverse problems in structural dynamics such as nondestructive ultrasonic testing using EMATs are also investigated.

[http://www.yss\\_lab.mech.keio.ac.jp/](http://www.yss_lab.mech.keio.ac.jp/))

**Equipments:** Superconductors

- **Artificial Intelligence/ Image Processing (ICS:Hagiwara Laboratory)**

This laboratory focuses on new technologies inspired by nature such as neural networks, fuzzy systems, evolutionary computation, and kansei engineering, with the goal of developed applications being implementation of systems having higher level intelligent information processing ability similar to humans.

<http://www.soft.ics.keio.ac.jp/>)

- **Communication Robot/ Human-Robot Interaction (ICS:Imai Laboratory)**

This laboratory focuses on communication robot mechanisms, with current investigations being aimed at the development of a speech dialogue system and recognition mechanism for a route guide robot, caretaker/guard robot, and development of a rescue robot which informs victims about devastation.

<http://www.ayu.ics.keio.ac.jp/index.html>)

**Equipments:** Mobile Robot, Communication Robot

- **Control Engineering/ Modeling/ System Identification (APPI:Adachi Laboratory)**

This laboratory focuses on control engineering for: (1) theoretical research of model predictive control, system identification/estimation theory, learning theory, and (2) applied research of automobile (engine control, active safety, and others), aerospace (satellite and helicopter), precision instrument, and welfare equipment.

[http://arx.appi.keio.ac.jp/?ml\\_lang=en](http://arx.appi.keio.ac.jp/?ml_lang=en))

### **1.3. SJTU, Shanghai Jiao Tong University (China)**

#### **1. Presentation of the Research laboratories in SJTU**

The research activity in Robotics at SJTU is carried on mainly in the School of Mechanical Engineering of the Shanghai Jiao Tong University, China.

<http://me.sjtu.edu.cn/english/>

The staff of **School of Mechanical Engineering (SME)** consists of more than 400 persons among them full professors, associate professors, assistant professors, researchers, administrative and technical personnel.

SME has been established in 2002 as an integration of the formerly existing *Department of Mechanical Engineering*, established in 1921, and the formerly existing *Department of Power and Energy Engineering*, established in 1908. SME includes several national-supported research units - such as the State Key Laboratory of Mechanical Systems and Vibration, the Key Laboratory for Power Machinery and Engineering of State Education Ministry, the Engineering Research Center of Solar Power and Refrigeration of State Education Ministry, the state 863/CIMS network lab and Robot network lab, etc.

In the past six years, it has obtained many prizes including 7 National Prizes for Progress in Science and Technology and 63 provincial and ministerial levels prizes. 61 monographs and textbooks, 708 international SCI papers are published. Amount of patents ranks first among all schools in SJTU. In 2010, the total scientific research fund was 318 million RMB (around 48.2 million USD).

The robot-related research activities developed at the SME include:

- parallel robotics and applications
- heavy-duty forging manipulators
- manipulation and grasping
- robotic assembly
- modular and reconfigurable robotics
- rescue and security robotics
- humanoid robotics
- rehabilitation robotics
- microrobotics
- other robotics related problems.

#### **2. Presentation of the Robotics Research Activity at SJTU**

The robotics and robotics related research are one of the fundamental activities carried out with an international and interdisciplinary support. We established good relationships with many foreign partners through international cooperation.

**Research Projects:** In the last 6 years (2005-2010), we have 87 projects funded by NSFC. Till Dec 2010, 52 NSFC projects are underway, among which there are 2 Distinguished Young Scholar Projects, 2 Oversea Scholar Cooperation Projects, and 1 key NSFC project.

In the last 6 years, almost half the funding came from the central government and Shanghai municipal government. We have 1 State Key Fundamental Research Project ("973" Program); 15 sub-projects of "973" Program; 3 National Development and Reform Commission Projects; 2 key projects of the Ministry of Science and Technology; 5 projects of the Ministry of Science and Technology; 1 support project of the Ministry of Science and Technology, 10 sub-projects of support project of the Ministry of Science and Technology, 67 projects of National High-Tech Research and Development Program ("863" Program), 3 Xinghuo projects of the Ministry of Science and Technology, 1 key project of the Ministry of Education & the State Administration of Foreign Expert's Affairs; 40 major and key projects of Science and Technology Commission of Shanghai Municipality (STCSM).



Besides, the industries provided strong financial and technological supports. A good cooperation has been built up with many internationally famous companies, such as China First Heavy Industry (CFHI), Shanghai Electric, BAOSTEEL, Ford Motor Company, etc..

Till Dec 2010, 1 project from “973” Program; 10 sub-projects from “973” Program; 3 projects from National Development and Reform Commission; 1 support project of the Ministry of Science and Technology; 10 sub-projects of support project of the Ministry of Science and Technology; 33 projects from “863” Program; 3 Xinghuo projects, 1 key project of the Ministry of Education & the State Administration of Foreign Expert’s Affairs; 23 major and key projects from STCSM; 5 projects from some other commission of Shanghai municipal government are underway.

The award ratio of the NSFC project is at the top among the same discipline, which suggests the high level of basic research of our school.

<http://me.sjtu.edu.cn>

- **The Institute of Design and Control Engineering for Heavy Equipment:** The Institute of Design and Control Engineering for Heavy Equipment institute was established in April 2007 in order to focus on the design and theoretical research of huge and high payload robotic equipments such as large manipulators and equipments for nuclear power plants. There are 21 faculty members in the institute, including 5 professors and 6 associate professors. The main research fields includes design and application of parallel robots and heavy payload manipulating equipment, humanoid robots and micro-manipulating robots, the optimization design and key technologies of huge payload press, design and manufacturing of equipments of nuclear power plants, simulation technologies of nuclear power plants, and application of nuclear technology.  
Main research fields: parallel kinematic robotics and applications, including the type synthesis of parallel robotics, the dimensional synthesis of parallel robotics, the redundant actuation of parallel robotics, mechanism analysis and synthesis, mechanism dynamic design, task-oriented parallel kinematic mechanism design, the design of heavy payload manipulating equipments, the design of high payload mechanical press, new type shield machine for tunnel engineering; walking robotics and applications, including the humanoid robots, four-leg heavy-duty walking robotics, six-leg walking robotics, multi-leg robotics, snakelike robot; micro-manipulation robotics and applications, including the reducible type synthesis of micro-manipulation robotics, the input-output relationship modeling of the micro-manipulation robotics, the motion planning of micro-manipulation, the calibration, the application.
- **Institute of Mechatronics Control :** The institute of Mechatronics Control is one of the earliest specialties authorized to confer doctoral degrees in China. It has a total of 13 staff members. Four of them are both professors and doctoral supervisors, four are associate professors, three are engineers and two are lecturers. The institute keeps a long-term contact with universities and corporations in the United States, Germany, and Japan, etc. The SMC-STJU Technology Center has been established and the circumstance control center will be set up soon. About 20 national projects have been completed. The Project “Bottom-supported Walking Drilling Platform project”, “Reliability Analysis to Hydraulic Pressure Pump” and “Intelligent Oil Supply Control System for Hongqiao International Airport” has gained awards at the provincial level. There is more than 10 programs on going in the institute, including state key program, NSFC program, “863” program, etc.  
Main research fields: Mechatronics Engineering and Intelligent Control; Fluid Power Transmission and Control; Web-based Long-distance Supervision and Intelligent Maintenance; Missile Launching and Tracking Equipment and Communication Technology; Intelligent Robot Technology; Chaotic Dynamical Engineering; Environment Control Technology; 3S-Based (GPS, GIS, RS) Intelligent Agricultural Equipment Technology; Manufactural Establishment in Agricultural Equipment Technology.
- **Institute of Mechatronics Design and Automation Technology:** The Institute of Mechatronics Design and Automation Technology was originally the Institute for Mechanics and Automation.

Its research areas include biotribology, intelligent machines, robotics, modern mechanism, rotor dynamics and microelectronic manufacturing equipment. The institute has 12 teachers, including 4 professors and 4 vice-professors.

Main research fields: Conceptual design of high-speed and high-precision mechatronic motion system; NC(Numerical Control) technology of microelectronic manufacturing equipment; Machine vision in microelectronic manufacturing equipment; Complex mechatronic system design.

- **Research Institute of Robotics** : The Institute of Robotics of Shanghai Jiao Tong University was established in 1985. The institute also has the Robot Network Lab and Shanghai Anchuan Robot Technology Service Center RIR involves 31 technical members of various levels, including 6 professors, 13 associate professors and senior engineers, 8 engineers and lecturers. Making great efforts for international cooperation, the institute keeps close relations and frequent academic exchange with universities, institutes or companies in Japan, US, Germany, Italy and France. Prof. Makino is its advisory professor.

Main research fields: Robot Technology; Flexible Automotive Assembly System; Moving Robot; Special Robot; Industrial Robot; Agriculture Robot; Entertainment Robot; Micro-Robot; Medical Automotive Facility; System Integrate Technology for Robot.



## 2 Staff Members of Associated Partners

### 2.1 Staff members at AIT, Asian Institute of Technology (Thailand)

The list of staff members who will be responsible for teaching and/or directing Master thesis is composed of staff from Mechatronics and Computer Science field of studies, School of Engineering and Technology.

<b>Name/First name</b>	<b>Function</b>	<b>Research Interest</b>
Dr Nitin Afzulpurkar	Professor	Robotics/ image processing/ Automation
Dr Manukid Parnichkun	Associate Professor	Robotics/ Intelligent Control/Sensors
Dr Mathew Dailey	Assistant Professor	Mobile Robots/ Human-Robot Interaction

### 2.2 Staff members at STKU (KEIO University)

The list of staff members who will be responsible for teaching and/or supervising the students research work consists of persons from Dept.of SD (System Design Engineering), Dept. of ME (Mechanical Engineering) and Dept. of ICS(Information and Computer Science ).

#### Abbreviations:

Pr	Full Professor
AP	Associate Professor
R	Assistant Professor

<b>Name/First name</b>	<b>Function</b>	<b>Research Group</b>
Kouhei Ohnishi	Pr(SD)	Robotics/ Haptics/ Motion Control
Toshiyuki Murakami	Pr(SD)	Robotics/ Welfare Machine /Motion Control
Akira Mita	Pr(SD)	Applied Robotics/Structural Health Monitoring
Hideki Aoyama	Pr(SD)	Mechanical Design
Norihisa Miki	AP(ME)	Robotics/Micro Machine
Kazuo Yoshida	Pr(SD)	Robotics/ Intelligent Control
Hiromitsu Ohmori	Pr(SD)	Control Engineering / Nonlinear Engineering
Masaki Takahashi	R(SD)	Robotics/ Intelligent Control
Kazuo Nakazawa	AP(SD)	Robotics/ Motion Analysis/ Image Analysis
Tojiro Aoyama	Pr(SD)	Mechanical Design
Takahiro Yakoh	AP(SD)	Internet applications / Network based control system
Hiroaki Nishi	AP(SD)	Distributed Shared System/ ASIC, FPGA design
Toshihiko Sugiura	AP(ME)	Electromagnetics &Mechanics / Nonlinear Dynamics
Jun Komotori	AP(ME)	Metallic Biomaterials
Masafumi Hagiwara	Pr(ICS)	Artificial Intelligence/ Image Processing
Michita Imai	AP(ICS)	Communication Robot/ Human-Robot Interaction
Shuuichi Adachi	Pr(APPI)	Control Engineering/ Modeling/ System Identification

### **A2.3 Staff members SJTU, Shanghai Jiao Tong University (China)**

<b>Name/First name</b>	<b>Function</b>	<b>Research Group</b>
GUO Weizhong	Professor	School of Mechanical Engineering
GAO Feng	Professor	School of Mechanical Engineering
ZHANG Qing	Associate prof.	School of Mechanical Engineering
MA Chunxiang	Associate professor	School of Mechanical Engineering
ZHAO Xianchao	Associate professor	School of Mechanical Engineering
GAO Hong	Assistant professor	School of Mechanical Engineering
CHEN Jie	Assistant professor	School of Mechanical Engineering
LIU Renqiang	Assistant professor	School of Mechanical Engineering
ZHANG Yong	Assistant professor	School of Mechanical Engineering
QI Chenkun	Assistant professor	School of Mechanical Engineering
HE Jun	Assistant professor	School of Mechanical Engineering

### **A7.3 CV of local coordinators of associated institutions**



**Nitin AFZUKPURKAR**  
**(AIT Local Coordinator)**  
[nitin@ait.ac.th](mailto:nitin@ait.ac.th)

**Address**

Mechatronics and Microelectronics FoS  
School of Engineering and Technology  
Asian Institute of Technology (AIT),  
PO.Box 4, Klongluang, Pathumthani 12120  
Bangkok, Thailand

**Current position**

**Associate professor**

**Education**

Ph.D. in Mechanical Engineering (Robotics), Canterbury University, New Zealand, 1990  
B.E. in Mechanical Engineering, University of Pune, India, 1981

**Teaching activities**

Robotics, computer vision (pattern recognition and image processing, mechatronics

**Research interest**

1. Robotics
2. Computer vision (pattern recognition and image processing)
3. Process control (DCS and SCADA) system development
4. MEMS design, fabrication for electronic and bio medical applications
5. Mechatronics applications for industrial use

**Career**

1998	Current
Employer:	Asian Institute of Technology
Position Held:	Associate Professor
September 1996-	September 1998
Employer:	Asian Institute of Technology
Position Held:	Assistant Professor
Oct 1995	September 1996
Employer	The Chinese University of Hong Kong, Hong Kong
Position Held	UGC Fellow, Department of Mechanical & Automation Engineering
Mar 1994	September 1995
Employer	Electrotechnical Laboratory, Japan
Position Held	STA Fellow, Autonomous systems section

**Professional activities:**

Training programs organizer:

- 5 Training Programs on DCS and SCADA Systems for Petro Vietnam delivered to the senior managers and engineers of Petro Vietnam in 2004 and 2005.
- 10 training programs for Electronics industry on machine vision, control systems, and Automation
- Program Director: Policy Level workshop on Trends in Microelectronics R & D and Industry, as part of Cooperation between AIT and Center For Science & Technology Of The Non-Aligned And Other Developing Countries (NAM S&T) with local support of Govt. of Vietnam Da Nang University, Vietnam, November, 2001



- Program Director; International training Program for Microelectronics, Bangkok, August, 2000  
Organized International workshop on Microelectronics curriculum and Program Development in 1999 and 2 workshops in 2000, Bangkok, Thailand

### **Supervision of thesis:**

Graduated (as the chair) 103 Master students and 4 Doctoral students (1997-2006).

### **Summary of Publications:**

International Journals 25  
Books 4  
Chapters in books 3  
International conferences 70

### **Selected publications (max. 5):**

1. A. Nisar, N. Afzulpurkar, B. Mahaisavariya, A. Tuantranont, 'MEMS Based Micropumps in Drug Delivery and Biomedical Applications', "Sensors & Actuators: B. Chemical", Accepted for publication, impact factor 2.30.
2. Siritariwat, D. TongsoPorn, K. Chooruang, N. Afzulpurkar, "A Study of Noise Effects Due to the Diode Protection" for Shield Resistance Measurement of GMR Recording Heads" IEEE Transactions on Magnetics, Vol. 41, No. 10, October 2005, pp 2941-2943. Impact factor 1.014
3. V. Minh, N. Afzulpurkar "A robust Model Predictive Control for Input Saturated and Softened State constraints" Asian Journal of Control, Vol. 7, Number 3, September 2005, pp 319-325, Impact factor 0.466
4. M. Ashraful Amin, N. Afzulpurkar, M. Dailey, V. Esichaikul, D. Batanov, "Fuzzy-C-Mean Determines the Principle Component Pairs to Estimate the Degree of Emotion from Facial Expressions ", Lecture Notes in Computer Science, Springer-Verlag GmbH, ISSN:0302-9743, Volume 3613 / 2005 , pp.484-496. Impact factor 0.402
5. Afzulpurkar, N.V., Weerakamhaeng, Y., "Precision positioning using mems based microactuator", Mechatronics Journal, Elsevier Sciences, vol. 12, 2002, pp 1213-1223, Impact factor 0.679

### **Other relevant information**

- Editorial Consultant Board member, International Journal of Advanced Robotic Systems, Austria
- Conference Program Chair and Editor, Proceedings of the fourth IEEE Asian Conference on Robotics and Automation (ACIAR, 2005), May, 2005, Bangkok, Thailand.
- Conference Program Chair and Editor Proceedings of the third Asian Conference on Robotics and Automation (ACIAR, 2003), May, 2003, Bangkok, Thailand,
- Conference Program Chair and Editor, Proceedings of the second Asian Symposium on Robotics and Automation (ASIAR, 2001), May, 2001, Bangkok, Thailand,
- Conference Program Secretary and Editor Afzulpurkar, N.V, Proceedings of the first Asian Symposium on Robotics and Automation (ASIAR, 1999), May, 1999, Bangkok, Thailand

Member of program committee FSKD 2005, ICMT 2005, IEEE ICMA 2005, ICM/NFT 2006, DAAAM International 2006, International workshop on Mechatronics 2006

Journal paper reviewer for top Journals in my field. Information for 2006 is listed below. For other years the information is too long to be included

Paper reviewer for International Journal for Automation and computing  
Paper Reviewer for Journal of Simulation Modelling Practice and Theory  
Paper Reviewer for Journal of Mechatronics  
Paper Reviewer for Journal of Intelligent and Fuzzy Systems  
3 USA patents holder.

**Toshiyuki MURAKAMI**  
**(Local coordinator)**  
[mura@sd.keio.ac.jp](mailto:mura@sd.keio.ac.jp)

**Address**

Department of System Design Engineering, Keio University  
3-14-1 Hiyoshi, Kohoku  
Yokohama 223-8522 Japan

**Current position**

Full Professor, Department of System Design Engineering at Keio University Coordinator of EMARO.

**Education**

Ph.D in Electrical Engineering 1993, Keio University, Japan,  
M.E in Electrical Engineering 1990, Keio University, Japan,  
B.E in Electrical Engineering 1988, Keio University, Japan.

**Teaching activities**

Teaching courses include modeling of robots, control of robots, and mobile robots. For engineering students and M.Sc students.

**Research interest**

- Modeling and Control of Redundant and Flexible Robot,
- Parameter Identification of Electric Vehicle, Electric Vehicle Control,
- Modeling and Control of Unicycle/Two Wheeled Mobile Robot,
- Modeling and Control of Electric Bicycle,
- Modeling and Control of Helicopter.

**Career**

Full professor at Department of System Design Engineering, Keio University, April 1996-present,  
Associate Professor at Department of Electrical Engineering, Keio University, April 1988-March 1996,  
Assistant Professor at Department of Electrical Engineering, Keio University, April 1982-March 1988,  
Instructor at Department of Electrical Engineering, Keio University, April 1980-March 1982.

**Professional activities**

Chief of “Department of System Design Engineering at Keio University”

**Supervision of thesis in 2006**

2 PhD students  
15 Master students  
7 Bachelor students

## Summary of Publications

International Journals 16

Books and chapters in books 7

International conferences 127

## Selected publications (max. 5):

1. J.Miyata, Y.Kaida and T.Murakami, "v-phai-Coordinate-Based Power-Assist Control of Electric Wheelchair for a Caregiver", *IEEE Transactions on Industrial Electronics*, Vol.55, No.6, pp2517-2524, 2008.
2. T.Shibata and T.Murakami, "Null Space Motion Control by PID Control Considering Passivity in Redundant Manipulator", *IEEE Transactions on Industrial Informatics*, Vol.4, No.4, pp261-270, 2008
3. Y.Tanaka and T.Murakami, "A Study on Straight Line Tracking and Posture Control in Electric Bicycle", *IEEE Transactions on Industrial Electronics*, Vol. 56, No.1, pp159-168, 2009.
4. Y.Yamaguchi and T.Murakami, "Adaptive Control for Virtual Steering Characteristics on Electric Vehicle using Steer-by-Wire System", *IEEE Transactions on Industrial Electronics*, Vol.56, No.5, Pp1585-1594, 2009.
5. T.Ohta and T.Murakami, "A Stabilization Control of Bilateral System with Time Delay by Vibration Index -Application to Inverted Pendulum Control-", *IEEE Transactions on Industrial Electronics*, Vol.56, No.5, Pp1595-1603, 2009

## Other relevant information

- Member of IEEE Robotics and Automation Society.
- Member of IEEE Industrial Electronics Society.
- Special session Chair of International Conference on Advanced Intelligent Mechatronics (AIM97).
- Committee Member of 3rd China-Japan Symposium on Mechatronics(2001).
- Committee Member of 6th Japan-France Congress on Mechatronics(2003).
- Vice Program Chair of the 2005 International Power Electronics Conference (IPEC-Niigata 2005).
- Program Committee Member of International Conference on Electrical Machines and Systems ( ICEMS2006).
- Technical Committee Member of Power Conversion Conference (PCC-Nagoya 2007).
- Technical Program Co-chair of IEEE International Conference on Mechatronics (ICM2007).
- Track Co-Chair of the 33rd Annual Conference of the IEEE Industrial Electronics Society (IECON2007).
- Committee Member of 7th Japan-France Congress on Mechatronics (2008).

**Weizhong GUO**  
**local coordinator at SJTU**  
[wzguo@sjtu.edu.cn](mailto:wzguo@sjtu.edu.cn)

**Address**

The Mechanical Engineering Building,  
No. 800, Dongchuan Road,  
200240 Shanghai, China

**Current position**

Professor, School of Mechanical Engineering, at Shanghai Jiao Tong University.

**Education**

Master Certificate in TSEE (Teaching Science and Engineering in English, The University of Manchester-UK), 2006  
Ph.D in Mechanical Design and Theory (Shanghai Jiao Tong University-China), 1999  
M.Sc in Mechanics (Southeast University- China), 1996  
B.Sc in Machine Design and Manufacturing (Ocean University of Qingdao- China) 1993.

**Teaching activities**

Teaching courses include Mechanisms and Machine Theory, Mechanical Design, Mechanical Dynamics, and GEARE Mechatronic Design. For engineering students, M.Sc students, and PhD students.

**Research interest**

- Mechanisms;
- Robotics;
- Creative design;
- Mechanical press design;
- Heavy equipment design.

**Career**

Professor of School of Mechanical Engineering, at Shanghai Jiao Tong University since 2009,  
Associate professor of School of Mechanical Engineering, at Shanghai Jiao Tong University, 2001-2009,  
Visiting Professor (EMARO), Faculty of Engineering, DIMEC, University of Genova, Italy, May & June, 2009,  
Post-Doc and Research Associate, Department of Automation and Computer Aided Engineering, the Chinese University of Hong Kong, Hong Kong, January - July 2003, and December 2001 - May 2002,  
Assistant professor at School of Mechanical Engineering of Shanghai Jiao Tong University, 1999-2001.

**Supervision of thesis:**

- 3 PhD dissertations
- 12 M.Eng. thesis
- 13 BEng. thesis

## Summary of Publications:

Journals 129

Books 2

Chapters in books 18

Conferences 62

## Selected publications (max. 5):

1. Weizhong Guo, Hongying Yu edited, Mechanism and Machine Theory, Tsinghua Press/Beijing Jiao Tong University Press, China, January 2010. (ISBN: 978-7-81123-756-6) (in Chinese)
2. W. Z. Guo and F. Gao, Solution Space Atlases, Workspace Characteristics Charts and Joint Space Maps for the Design of Planar Serial Manipulators, *Mechanism and Machine Theory*, 2010, 45(3): 392-407
3. Guo Weizhong, Pei Ling, Gao Feng, 2009, Shape Optimization of Compliant Mechanism for Planar Path Generation, *Chinese Journal of Mechanical Engineering*, 45(12):1-6 (in Chinese)
4. W. Z. Guo and R. Du, Mobility of Single-Loop N-Bar Linkage with one Active/Passive Prismatic Joint, *ASME Journal of Mechanical Design*, 2006, 128(6): 1261-1271
5. W. Z. Guo, K. He, K. Yeung and R. Du. A New Type of Controllable Mechanical Press: Motion Control and Experiment Validation. *ASME Journal of Manufacturing Science and Engineering*, 2005, 127(4): 731-742

## Other relevant information

- American Society of Mechanical Engineer (ASME), member
- Chinese Mechanical Engineering Society (CMES), senior member
- Mechanical Transmission Division of Chinese Mechanical Engineering Society, vice Secretary General
- Mechanisms Committee of Chinese Mechanical Engineering Society, Secretary General
- National Committee for Teaching of Mechanism and Machine Theory, committee member
- East-China Committee for Teaching of Mechanism and Machine Theory, vice chair
- Shanghai Committee for Teaching of Mechanism and Machine Theory, chair
- Machine Design and Research, editorial boarding, member
- Member, Committee of Teaching Source Construction of Fundamental Course of Mechanical Engineering, Higher Education Press of China
- ASME/IFTtoMM ReMAR2009 (International Conference on Reconfigurable Mechanisms and Robots), Jun. 23-26, London, UK, member of Organization Committee, Regional Chair
- Int Conf on Mechanism and Machine Science, China, 2010 (CCMMS2010), member of Organization Committee
- The Second International Summer School on Screw-Theory Based Methods in Robotics, July 26 - August 6, 2010, Shanghai Jiao Tong University, Shanghai, China, Local organizer
- 1st Int Conf Applied Bionics&Biomechanics (ICABB2010, Italy) member of International Program Committee
- 2nd Int Sym Robotics & Mechatronics (ISRM2011, Shanghai) chairman of Organization Committee